Detroit Edison
Fermi 2
6400 North Dixie Highway
Newport, Michigan 48166
(313) 586-4000

Nuclear Operations

May 1, 1987
NRC-87-0039

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

References: 1) Fermi 2
NRC Docket No. 50-341
NRC License No. NPF-43

2) Detroit Edison Letter to NRC, "Proposed Technical Specifications (License Amendment) Change - Fire Suppression Systems (3/4.7.7)," (VP-NO-87-0019), dated March 6, 1987

3) Detroit Edison Letter to NRC, "Submittal of Fermi 2 Updated Final Safety Analysis Report," (VP-NO-87-0053), dated March 18, 1987

4) Detroit Edison Letter to NRC, "Alternate Shutdown System," (VP-NO-87-0014), dated January 28, 1987

5) Detroit Edison Letter to NRC, "Alternate Shutdown Proposed Technical Specification," (VP-NO-86-0091) dated July 15, 1986.

Subject: Deletion of the Fire Protection Program Requirements from Technical Specifications in Accordance with Generic Letter 86-10

Detroit Edison is providing, herein, supplemental information to a recent license amendment request dated March 6, 1987 (Reference 2). Enclosure 1 to this letter is a copy of Sections 9A.1 and 9A.6 of the Updated Final Safety Analysis Report (UFSAR) that have been added as a result of the transfer of Fire Protection Program requirements from the Technical Specifications to the UFSAR. This transfer of information and requirements is in accordance with NRC Generic Letter 86-10. These changes were included in the recent UFSAR update (Reference 3) to ensure that the Fire Protection Program is reflected

A006
1/

in the document at the time the Technical Specification change request is approved.

Detroit Edison proposed on July 15, 1986 (Reference 5) a Technical Specification change request that added requirements as a result of the recent installation of the Alternate Shutdown System. As a result of the issuance of Generic Letter 86-10, Detroit Edison requests that this proposed change be withdrawn. These additional requirements and information have also been included in the UFSAR and are provided in Enclosure 1.

Detroit Edison provided in a letter dated March 6, 1987 (Reference 2) a request to replace paragraphs (a), (b) and (c) of License Condition 2.C (9) to the Fermi 2 Operating License with the License Condition specified in Generic Letter 86-10. In addition to this request and subsequent removal of the Fire Protection Program requirements from the Technical Specifications, Detroit Edison also requests deletion of paragraph (d) of License Condition 2.C (9). Paragraph (d) could be deleted concurrent with the issuance of the final NRC Safety Evaluation Report to the Fermi 2 Alternate Shutdown System (Reference 4). Enclosure 2 to this letter is a revised proposed change to the Fermi 2 Operating License Condition Item 2.C (9), "Modifications for Fire Protection."

Detroit Edison has determined that the proposed amendment to Operating License No. NPF-43, License Condition 2.C.(9) and Technical Specifications, deleting the fire protection requirements currently specified therein:

1. Does not involve a significant increase in the probability or consequences of an accident previously evaluated because the proposed change does not involve a physical modification to the plant or a change to any safety system setpoints. The administrative concept recommended in Generic Letter 86-10, of concurrently removing the fire protection requirements from the Plant Technical Specifications and incorporating them into the UFSAR will also not affect or have any impact on the functioning of the fire protection program, which will continue to be maintained. In addition, the the proposed changes will not conflict with the requirements of the Fermi 2 Operating License.

2. Does not create the possibility of a new or different kind of accident from any accident previously evaluated because, as is stated above, the proposed change is administrative in nature and

will not affect the plant accident analyses documented in the UFSAR, or the operation or the functions of any safety-related plant equipment. The fire protection program, found acceptable by the Nuclear Regulatory Commission prior to issuance of the Fermi 2 Operating License, will continue to be maintained.

3. Does not involve a significant reduction in the margin of safety because the incorporation of the fire protection requirements into the UFSAR will not decrease the level of fire protection in the plant. In effect, the proposed change would increase the margin of safety since all fire protection requirements and related UFSAR commitments would be contained in a single document ensuring the uniform enforcement of the fire protection requirements. Any future changes to the Fire Protection Program will continue to be evaluated in accordance with the provisions of 10CFR50.59 of the Code of Federal Regulations.

If you have any questions regarding this matter, please contact Mr. Steven Frost at (313) 586-4210.

Sincerely,

Frank E. Agosti, Vice President
Nuclear Operations

Enclosures

cc: Mr. A. B. Davis
Mr. E. G. Greenman
Mr. W. G. Rogers
Mr. J. J. Stefano

ENCLOSURE 1

e. Administrative controls to minimize the amount of combustibles that safety-related areas may be exposed to and the control of potential ignition sources

f. Fire-fighting strategies for safety-related areas

g. Periodic inspection, maintenance, and testing of fire detection and protection systems

h. Training of necessary plant personnel for fire watch duty

i. Assurance that necessary actions are taken to minimize fire risk and repairs are made as soon as practical when fire equipment is taken out of service

j. Procedures that establish a method for design control, procurement, installation, and testing for fire protection in safety-related areas

k. A quality assurance (QA) program so that the requirements for design, procurement, installation, testing, and administrative controls for fire protection in safety-related areas are satisfied

l. The necessary fire protection equipment, communications equipment, and emergency lighting which has been installed in accordance with the fire hazards analysis contained in this appendix.

9A.1.3.3 Organizational Responsibilities

a. The Group Vice President is responsible for the operation of Fermi 2 and therefore has overall responsibility for the fire protection program

b. The Vice President - Nuclear Engineering and Services has been delegated management responsibility for the formulation, implementation, and effectiveness of the fire protection program

c. Nuclear Engineering is directly responsible for

1. Having a qualified fire protection engineer within Nuclear Engineering. This engineer assists in the formation, maintenance, and periodic review of the fire protection program

2. Establishing and maintaining the overall fire protection program description

3. Developing and maintaining the fire detection/protection design and configuration control for

onsite facilities and location of the safe-shutdown equipment for fires

4. Reviewing fire protection practices and evaluating design-related sections of insurance inspections

5. Ensuring that the fire protection program associated with safety-related systems, components, and structures conforms to NRC requirements by

   (a) The performance of fire hazards analyses, and evaluations as required

   (b) The review and evaluation of designs in accordance with current fire codes and standards for applicability to the plant

   (c) The evaluation of operating experience reports (i.e., License Event Reports, Safety Evaluation Reports [SERs], Inspection and Enforcement Bulletins, Circulars, and Notices) for the potential impact on plant fire safety.

d. Nuclear Production is directly responsible for:

1. Having a nuclear fire protection specialist within Nuclear Production who is responsible for implementing and coordinating the Fermi 2 fire protection program for Nuclear Production

2. Organizing and implementing the plant fire brigade. The fire brigade is composed of a minimum of five Nuclear Production personnel and shall be maintained onsite at all times.* The fire brigade shall not include the Nuclear Shift Supervisor, the Shift Technical Advisor, nor the two other members of the minimum shift crew necessary for safe shutdown of the unit nor any personnel required for other essential functions during a fire emergency. To be a fire brigade member, personnel must first complete the required fire brigade training, rad-worker training, and respirator training, and be physically qualified

3. Conducting and evaluating required plant fire brigade drills

*The fire brigade composition may be less than the minimum requirements for a period of time not to exceed 2 hr, in order to accommodate unexpected absences, provided immediate action is taken to fill the required positions.

9A.6 FIRE PROTECTION AND ALTERNATIVE SHUTDOWN SYSTEMS CONDITIONS FOR OPERATION

With the advent of Generic Letter 86-10, the NRC defined the necessary steps and the commitments that a utility would have to make in order to remove fire protection from the Technical Specifications and to incorporate it into the UFSAR. The purpose of this section is to incorporate the conditions for fire protection during operations into the UFSAR, allowing removal from the Technical Specifications.

9A.6.1 Fire Detection Instrumentation

9A.6.1.1 Operability

1. As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 9A.6.1-1 shall be operable whenever equipment protected by the fire detection instrument is required to be operable

2. With any, but no more than one-half the total Function A* fire detection instruments in any fire zone shown in Table 9A.6.1-1 inoperable, the inoperable Function A instrument(s) will be restored to operable status within 14 days or, within the next hour, a firewatch patrol will be established to inspect the zone(s) with the inoperable instrument(s) at least once per hour

3. With more than one-half of the Function A fire detection instruments in any fire zone shown in Table 9A.6.1-1 inoperable, or with any Function B** fire detection instruments shown in Table 9A.6.1-1 inoperable, or with any two or more adjacent instruments shown in Table 9A.6.1-1 inoperable, a firewatch patrol will be established within 1 hr to inspect the zone(s) with the inoperable instrument(s) at least once per hour.

9A.6.1.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.1-2.

---

*Function A fire detection instruments provide early-warning fire detection and notification only.

**Function B fire detection instruments actuate fire suppression systems in addition to providing early warning and notification.

TABLE 9A.6.1-1 FIRE DETECTION INSTRUMENTATION

Instrument Location	Fire Detection Zone	Total Number of Instruments[a] Ionization (x/y)	Photoelectric (x/y)	Fixed Thermal (x/y)	Infrared (x/y)
a. Reactor building[b]					
1. Torus area	1	8/0			
2. NW corner rooms RHR pump	2	4/0			
3. SW corner rooms RHR pump	3	4/0			
4. SE corner rooms CRD HPCI	4	9/0			
5. NE corner rooms RCIC	5	5/0		8/0	
6. First floor	7	20/0			
7. EECW system area second floor	10	21/0			
8. Third floor	15	15/0			
9. Fourth floor	17	8/0		2/0	
10. Refueling area, fifth floor	17				10/0
b. Auxiliary building					
1. Basement, N control air equipment	4	6/0			
2. Corridors, 562 ft, 563 ft	5	2/0			
3. First floor mezzanine, cable tray, 583 ft, 603 ft	6	17/0			
4. Switchgear room, corridor area second floor	9	9/0			
5. Cable tunnel	9	10/0			
6. Cable tray area second floor mezzanine	9A	0/22			
7. DC/MCC room, third floor	14	0/10			
8. Switchgear, battery and M-G rooms, third floor	14	14/0			
9. Fourth floor	16	6/0			
10. Fifth floor	16	25/0			

TABLE 9A.6.1-1 FIRE DETECTION INSTRUMENTATION (Cont'd)

Instrument Location	Fire Detection Zone	Total Number of Instruments[a] Ionization (x/y)	Photoelectric (x/y)	Fixed Thermal (x/y)	Infrared (x/y)
c. Control center[b]					
1. Relay room	8	0/27			
2. Cable spreading room	11	1/28			
3. Control room	12	51/0	4/0	2/0	
4. Computer room	13	0/13			
5. Computer room above drop ceiling	13	5/0	2/0		
d. RHR complex					
1. Division I pump room	50	8/0			
2. Division II pump room	51	8/0			
3. EDG 11 room suppression				0/8	
4. EDG 12 room suppression				0/8	
5. EDG 13 room suppression				0/8	
6. EDG 14 room suppression				0/8	
7. EDG 11 switchgear room	52	6/0			
8. EDG 12 switchgear room	53	6/0			
9. EDG 13 switchgear room	54	6/0			
10. EDG 14 switchgear room	55	6/0			
e. General service water pump house					
1. First floor	21	2/0		3/0	

[a](x/y): X is number of Function A (early-warning fire detection and notification only) instruments.
Y is number of Function B (actuation of fire suppression systems and early warning and notification) instruments.

[b]The fire detection instruments located within the containment are not required to be operable during the performance of Type A Containment Leakage Rate Tests.

TABLE 9A.6.1-2 FIRE DETECTION INSTRUMENT SURVEILLANCES

Interval	6 Months
	(1) Each of the required fire detection instruments shown in Table 9A.6.1-1 which are accessible during unit operation shall be demonstrated operable by performance of a channel functional test.
	(2) Fire detectors which are not accessible during unit operation shall be demonstrated operable by performance of a channel functional test during each cold shutdown exceeding 24 hr unless performed in the previous 6 months.
	(3) The NFPA Standard 72D supervised circuits supervision associated with the detector alarms of each of the required fire detection instruments shown in Table 9A.6.1-1 shall be demonstrated operable.

9A.6.2 Fire Suppression Water System

9A.6.2.1 Operability

1. The fire suppression water system shall be operable at all times with:

   a. Two fire suppression pumps, each with a capacity of 2500 gpm, with their discharges aligned to the fire suppression header

   b. The general service water (GSW) intake structure water level $\geq$558 ft

   c. An operable flow path capable of taking suction from GSW intake structure and transferring the water through distribution piping with operable sectionalizing control or isolation valves to the yard hydrant curb valves, the last valve ahead of the water flow alarm device on each sprinkler or hose standpipe, and the last valve on each deluge or spray system, required to be operable per Subsections 9A.6.3, 9A.6.6, and 9A.6.7.

2. With one pump inoperable, restore that pump to operable status within 7 days or verify that the GSW system is operable as the backup water supply or provide an alternative backup pump

3. With the fire suppression water system otherwise inoperable, a backup fire suppression water system will be established or verify that the GSW system is operable as the backup water supply within 24 hr.

9A.6.2.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.2-1.

TABLE 9A.6.2-1 FIRE SUPPRESSION WATER SYSTEM SURVEILLANCE

FIRE SUPPRESSION WATER SYSTEM SHALL BE DEMONSTRATED OPERABLE BY:

Interval	7 Days	31 Days	92 Days	12 Months	18 Months	3 Years
	Verifying the minimum water supply level	(1) Starting the electric motor-driven fire suppression pump and operating it for at least 15 minutes on recirculation flow (2) Verifying that each valve (manual, power operated, or automatic) in the flow path is in its correct position		(1) Cycle each testable valve in the flow path through at least one complete cycle of full travel (2) Performance of a system flush	(1) Performing a system functional test that includes simulated automatic actuation of the system throughout its operating sequence (2) Verifying that each fire suppression pump develops a discharge of 150 percent of rated capacity at 65 percent of rated pressure (3750 # 10 percent gpm at 104 # 10 percent psig), and recording measured performance at minimum and rated loads (3) Cycling each valve (that is not testable during plant operation) in the flow path through at least one complete cycle of full travel, and (4) Verifying that each fire suppression pump starts sequentially to maintain the fire suppression water system pressure greater than or equal to 105 psig	Performing a flow test of the system in accordance with Chapter 8, Section 16 of the Fire Protection Handbook, 15th Edition, published by the National Fire Protection Association
THE DIESEL-DRIVEN FIRE SUPPRESSION PUMP SHALL BE DEMONSTRATED OPERABLE BY:						
	(1) Verifying that the fuel storage tank contains at least 150 gal of fuel (2) Starting the pump from ambient conditions and operating it for greater than or equal to 30 minutes on recirculation flow		Verifying that a sample of diesel fuel from the fuel storage tank, obtained in accordance with ASTM-D270-65, is within acceptable limits specified in Table 1 of ASTM D975-77, when checked for viscosity, water, and sediment		During shutdown, by subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service	
THE DIESEL-DRIVEN FIRE PUMP STARTING 24-V BATTERY BANK AND CHARGER SHALL BE DEMONSTRATED OPERABLE BY:						
	Verifying that the electrolyte level of each cell is above the plates and the overall battery bank voltage is greater than or equal to 24 V		Verifying that the specific gravity is appropriate for continued service of the battery. The specific gravity corrected to 77°F and full electrolyte level shall be greater than or equal to 1.200		(1) Verifying that the battery racks show no visual indication of physical damage or abnormal deterioration, and (2) Verifying that battery-to-battery and terminal connections are clean, tight, and free of corrosion, and are coated with anti-corrosion material	

9A.6.3 Spray and Sprinkler Systems

9A.6.3.1 Operability

1. The spray and sprinkler systems listed in Table 9A.6.3-1 shall be operable whenever equipment protected by the spray or sprinkler systems is required to be operable

2. Upon determination that one or more of the required spray or sprinkler systems is inoperable, take one of the following actions:

   a. Verify that fire detection and fire hose stations are operable in the zone of concern. For those zones in which redundant systems or components could be damaged, establish an hourly firewatch patrol for the zone and backup fire suppression equipment

   b. If fire detection and fire hose stations are not operable in the zone of concern, within 1 hr establish a continuous firewatch with backup fire suppression equipment for those zones in which redundant systems or components could be damaged; for other zones establish an hourly firewatch patrol.

9A.6.3.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.3-2.

TABLE 9A.6.3-1 SPRAY AND/OR SPRINKLER SYSTEMS

Area		Elevation	Type	RE[a]
a.	Reactor building			
	1. Torus room	560 ft	Wet pipe sprinkler	x
	2. Basement NE corner room	540 ft	Wet pipe sprinkler	
	3. HPCI turbine and pump room	540 ft	Wet pipe sprinkler	
	4. First floor, railroad bay	583 ft	Wet pipe sprinkler	x
	5. Second floor, cable trays	613 ft	Wet pipe sprinkler	x
	6. Fourth floor, M-G sets	641 ft 6 in.	Wet pipe sprinkler	
b.	Auxiliary building			
	1. Basement	551 ft and 562 ft	Wet pipe sprinkler	x
	2. Mezzanine and cable tray area	583 ft and 603 ft	Wet pipe sprinkler	x
	3. Ventilation equipment	677 ft	Manual flooding system	
	4. North/south corridor	562 ft	Wet pipe sprinkler	x
c.	RHR complex			
	1. Fuel-oil storage tank rooms (4)	-	Wet pipe sprinkler	
d.	General service water pump house			
	1. Diesel fire pump room	-	Wet pipe sprinkler	

[a]Sprinkler systems in fire zones where redundant equipment required for safe shutdown could be damaged from fires.

TABLE 9A.6.3-2 SPRAY AND SPRINKLER SYSTEMS SURVEILLANCE

Each of the spray and sprinkler systems listed in Table 9A.6.3-1 shall be demonstrated operable by:

Interval	31 Days	12 Months	18 Months
	Verifying that each control valve, manual, power operated or automatic, in the flow path is in its correct position	Cycling each testable control valve in the flow path through at least one complete cycle of full travel	(1) Performing a system functional test which includes simulated automatic systems, and each system except the ventilation room manual flooding system, by opening the inspection test valve and verifying the water flow alarm annunciation (2) A visual inspection of the sprinkler headers to verify their integrity

9A.6.4 CO_2 Systems

9A.6.4.1 Operability

1. The low-pressure CO_2 systems listed in Table 9A.6.4-1 shall be operable whenever equipment protected by the CO_2 systems is required to be operable

2. Upon determining that one or more of the required CO_2 systems is inoperable, take one of the following actions:

   a. Verify that fire detection and fire hose stations are operable in the zone of concern. For those areas in which redundant systems or components could be damaged, establish an hourly firewatch patrol for the zone and backup fire suppression equipment

   b. If fire detection and fire hose stations are not operable in the room of concern, within 1 hr establish a continuous firewatch with backup fire suppression equipment for those zones in which redundant systems or components could be damaged; for other zones, establish an hourly firewatch patrol.

9A.6.4.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.4-2.

TABLE 9A.6.4-1 CO_2 SYSTEMS

Elevation	Description	Location	RE[a]
a. 590 ft	Emergency diesel generators	RHR complex	
b. 677 ft	Standby gas treatment system charcoal filters	Aux bldg.	
c. 631 ft	Cable tray area	Aux bldg.	x
d. 643 ft 6 in.	Outside Division II switchgear room	Aux bldg.	

[a] CO_2 systems in fire zones where redundant equipment required for safe shutdown from fires could be damaged.

TABLE 9A.6.4-2 CO_2 SYSTEMS SURVEILLANCE

The CO_2 systems in Table 9A.6.4-1 shall be demonstrated operable by:

Interval	7 Days	31 Days	18 Months
	Verifying the CO_2 storage tank level to be greater than 50 percent full for systems (a) and (b) in Table 9A.6.4-1 and greater than 40 percent full for systems (c) and (d) in Table 9A.6.4-1 and pressure to be greater than 250 psig but less than 330 psig for all of the systems	Verifying that each manual control valve in the flow path is in its correct position	(1) Verifying that the system, including associated ventilation system fire dampers release mechanism, actuates manually and/or automatically, upon receipt of a simulated actuation signal (2) Observing CO_2 discharge nozzles to verify that there is no apparent blockage (e.g., rust, debris)

9A.6.5 Halon Systems

9A.6.5.1 Operability

1. The Halon systems in Table 9A.6.5-1 shall be operable with the storage tanks of either the main bank or the reserve bank having at least 95 percent of the main bank or the reserve bank full charge weight and 90 percent of the main bank or the reserve bank full charge pressure whenever equipment protected by the Halon system is required to be operable

2. Upon determining that one or more of the required Halon systems is inoperable, take one of the following actions:

   a. Verify that fire detection is operable in the zone of concern. For those zones in which redundant systems or components could be damaged, establish an hourly firewatch patrol for the zone and backup fire suppression equipment

   b. If fire detection is not operable in the zone of concern, within 1 hr establish a continuous firewatch with backup fire suppression equipment for those zones in which redundant systems or components could be damaged; for other zones, establish an hourly firewatch patrol.

9A.6.5.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.5-2.

TABLE 9A.6.5-1 HALON SYSTEMS

Elevation	Location	RE[a]
613 ft 6 in.	Relay room	
630 ft 6 in.	Cable spreading room	
655 ft 6 in.	Computer room	

[a]Halon systems in fire zones where redundant equipment required for safe shutdown from fires could be damaged.

TABLE 9A.6.5-2 HALON SYSTEMS SURVEILLANCE

The Halon systems in Table 9A.6.5-1 shall be demonstrated operable by:

Interval	31 Days	6 Months	18 Months
	Verifying tnat each valve (manual, power operated, or automatic) in the flow path is in its correct position by verifying Halon storage tank pressure	Verifying Halon storage tank weight and pressure	(1) Verifying the system, including associated ventilation system fire dampers release mechanism, actuates manually and automatically, upon receipt of a simulated actuation signal, and (2) Observing Halon discharge nozzles to verify that there is no apparent blockage (e.g., rust, debris)

9A.6.6 Fire Hose Stations

9A.6.6.1 Operability

1. The fire hose stations listed in Table 9A.6.6-1 shall be operable whenever equipment in the zone protected by the fire hose stations is required to be operable

2. With one or more of the fire hose stations shown in Table 9A.6.6-1 inoperable, provide gated wye(s) on the nearest operable hose stations(s). One outlet of the wye shall be connected to the standard length of hose provided for the hose station. The second outlet of the wye shall be connected to a length of hose sufficient to provide coverage for the area left unprotected by the inoperable hose station. Where it can be demonstrated that the physical routing of the fire hose would result in a recognizable hazard to operating personnel, plant equipment, or the hose itself, the fire hose shall be stored in a roll at the outlet of the operable hose station. Signs shall be mounted above the gated wye(s) to identify the proper hose to use. The above action shall be accomplished within 1 hr if the inoperable fire hose is the primary means of fire suppression for those zones in which redundant systems or components could be damaged, otherwise route the additional hose within 24 hr.

9A.6.6.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.6-2.

TABLE 9A.6.6-1 FIRE HOSE STATIONS

Location	Elevation	Hose Rack No.	RE[a]
a. Reactor building			
1. Fire hose at top of stairway in northwest auxiliary building	736 ft	RB-1	
2. Fire hose at northwest corner by elevator	684 ft 6 in.	RB-2	
3. Fire hose at southwest corner	684 ft 6 in.	RB-3	
4. Fire hose at northeast stairway	684 ft 6 in.	RB-4	
5. Fire hose in southwest walkway	684 ft 6 in.	RB-5	
6. Fire hose at northwest corner outside elevator	659 ft 6 in.	RB-6	
7. Fire hose at northeast corner in stairway	659 ft 6 in.	RB-7	
8. Fire hose at southwest corner at stairway	659 ft 6 in.	RB-8	
9. Fire hose at southeast corner at stairway	659 ft 6 in.	RB-9	
10. Fire hose at northwest corner at stairway	641 ft 6 in.	RB-10	x
11. Fire hose at northwest corner at stairway by elevator	641 ft 6 in.	RB-11	x
12. Fire hose at southwest corner at stairway	641 ft 6 in.	RB-12	x
13. Fire hose at southeast corner at stairway	613 ft 6 in.	RB-13	x
14. Fire hose at southwest corner near elevator	613 ft 6 in.	RB-14	x
15. Fire hose at southwest corner at bottom of stairway	613 ft 6 in.	RB-15	x

TABLE 9A.6.6-1 FIRE HOSE STATIONS (Cont'd)

Location		Elevation	Hose Rack No.	RE[a]
16.	Fire hose near drywell instrument monitoring rack (east walkway)	613 ft 6 in.	RB-16	x
17.	Fire hose in the northeast	613 ft 6 in.	RB-17	x
18.	Fire hose at southeast corner by auxiliary building access	613 ft 6 in.	RB-18	x
19.	Fire hose at northwest corner near elevator	583 ft 6 in.	RB-19	x
20.	Fire hose at northeast corner near elevator	583 ft 6 in.	RB-20	x
21.	Fire hose at railroad bay	583 ft 6 in.	RB-21	x
22	Fire hose at southeast corner near stairway	583 ft 6 in.	RB-22	x
23.	Fire hose at entrance to containment (southwest)	583 ft 6 in.	RB-23	x
24.	Fire hose at northwest corner near elevator	562 ft 6 in.	RB-24	x
25.	Fire hose at northeast corner near stairway	621 ft 6 in.	RB-25	x
26.	Fire hose at southwest corner near stairway	562 ft 6 in.	RB-26	x
27.	Fire hose at southeast corner near stairway	562 ft 6 in.	RB-27	x
28.	Fire hose at northwest corner near stairway	540 ft 6 in.	RB-28	x
29.	Fire hose at northeast corner near stairway	540 ft 6 in.	RB-29	x
30.	Fire hose at southwest corner near stairway	540 ft 6 in.	RB-30	x
31.	Fire hose at southeast corner near stairway	540 ft 6 in.	RB-31	x

TABLE 9A.6.6-1 FIRE HOSE STATIONS (Cont'd)

Location	Elevation	Hose Rack No.	RE[a]
32. Fire hose in HPCI room	540 ft 6 in.	RB-32	
33. Fire hose in CRD pump room	562 ft 6 in.	RB-33	x
b. Auxiliary building			
1. Fire hose at southwest corner in control center air conditioning equipment	677 ft 6 in.	AB-1	
2. Fire hose at northwest corner in ventilation equipment area	677 ft 6 in.	AB-2	
3. Fire hose at southwest wall in ventilation equipment area	677 ft 6 in.	AB-3	
4. Fire hose at north side in ventilation equipment area	659 ft 6 in.	AB-4	
5. Fire hose at south side in ventilation equipment area	659 ft 6 in.	AB-5	
6. Fire hose outside control room near center stairway	643 ft 6 in.	AB-6	
7. Fire hose outside cable spreading room in stairway from control room	630 ft 6 in.	AB-7	
8. Fire hose south wall cable tray room near stairway	630 ft 6 in.	AB-8	
9. Fire hose near column line H-12	613 ft 6 in.	AB-9	
10. Fire hose in walkway from reactor building	613 ft 6 in.	AB-10	
11. Fire hose in stairway from relay room to lower cable tray area	613 ft 6 in.	AB-11	
12. Fire hose at southeast corner by RBCCW heat exchanger	583 ft 6 in.	AB-12	x

TABLE 9A.6.6-1 FIRE HOSE STATIONS (Cont'd)

Location		Elevation	Hose Rack No.	RE[a]
13.	Fire hose at column G, 14 RBCCW	583 ft 6 in.	AB-13	x
14.	Fire hose near compressor receiver for Division II	551 ft 0 in.	AB-14	x
15.	Fire hose near compressor receiver for Division I	551 ft 0 in.	AB-15	x
c.	**Residual heat removal (RHR) complex**			
1.	Fire hose at top of stairway to RHR-1 switchgear room	617 ft 0 in.	RR-1	
2.	Fire hose at top of stairway to RHR-2 switchgear room	617 ft 0 in.	RR-2	
3.	Fire hose in RHR-1 near diesel generator service water pump	590 ft 0 in.	RR-3	
4.	Fire hose in RHR-2 near diesel generator service water pump	590 ft 0 in.	RR-4	
5.	Fire hose in RHR-1 near diesel generator No. 12	590 ft 0 in.	RR-5	
6.	Fire hose in RHR-2 near diesel generator No. 13	590 ft 0 in.	RR-6	
7.	Fire hose in RHR-2 near diesel generator No. 11	590 ft 0 in.	RR-7	
8.	Fire hose in RHR-2 near diesel generator No. 14	590 ft 0 in.	RR-8	

[a]Fire hose stations in zones where redundant equipment required for safe shutdown from fires could be damaged.

TABLE 9A.6.6-2 FIRE HOSE STATIONS SURVEILLANCE

Each of the fire hose stations listed in Table 9A.6.6-1 shall be demonstrated operable by:

Interval	31 Days	18 Months	3 Years
	A visual inspection of the fire hose stations accessible during plant operation to ensure that all required equipment is at the station	(1) A visual inspection of the fire hose stations not accessible during plant operation to ensure that all required equipment is at the station (2) Removing the hose for inspection and reracking (3) Inspecting all gaskets and replacing any degraded gaskets in the couplings	(1) Partially opening each hose station valve to verify valve operability and no flow blockage (2) Conducting a hose hydrostatic test at a pressure of 150 psig or at least 50 psig above the maximum fire main operating pressure, whichever is greater

9A.6.7 Yard Fire Hydrants and Hydrant Hose Houses

9A.6.7.1 Operability

1. The yard fire hydrants and associated hydrant hose houses listed in Table 9A.6.7-1 shall be operable whenever equipment in the areas protected by the yard fire hydrants is required to be operable

2. With one or more of the yard fire hydrants or associated hose houses listed in Table 9A.6.7-1 inoperable, within 1 hr have sufficient additional lengths of 2-1/2-in.-diameter hose located in an adjacent operable hydrant hose house to provide service to the unprotected area(s) if the inoperable fire hydrant or associated hydrant hose house is the primary means of fire suppression for areas in which redundant systems or components could be damaged, otherwise provide the additional hose within 24 hr.

9A.6.7.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.7-2.

TABLE 9A.6.7-1 YARD FIRE HYDRANTS AND ASSOCIATED HYDRANT HOSE HOUSES

Location	Hydrant Number	RE[a]
a. Between the RHR complex and the reactor building	9	
b. Southwest of the reactor building	10	
c. Southwest of the reactor building	11	
d. Southeast of the reactor building	12	

[a]Fire hydrants/hose houses in areas where redundant equipment required for safe shutdown from fires could be damaged.

TABLE 9A.6.7-2 YARD FIRE HYDRANTS AND HYDRANT HOSE HOUSES SURVEILLANCE

Each of the yard fire hydrants and associated hydrant houses listed in Table 9A.6.7-1 shall be demonstrated operable by:

Interval	31 Days	6 Months	12 Months
	Visual inspection of the hydrant hose house to ensure that all required equipment is at the hose house	During March, April, or May and during September, October, and November visually inspecting each yard fire hydrant and verifying that the hydrant barrel is dry and that the hydrant is not damaged	(1) Conducting a hose hydrostatic test at a pressure of 150 psig, or at least 50 psig above the maximum fire main operating pressure, whichever is greater (2) Replacement of all degraded gaskets in couplings (3) Performing a flow check of each hydrant

9A.6.8 Fire Rated Assemblies

9A.6.8.1 Operability

1. All fire rated assemblies* separating safe-shutdown fire zones, or rated assemblies separating portions of redundant systems necessary for safe shutdown within a fire zone, shall be operable whenever equipment protected by the rated assembly is required to be operable

2. With one or more of the required fire rated assemblies inoperable, take one of the following actions:

   a. Verify that fire detection is operable on at least one side of the inoperable assembly. If redundant systems or components could be damaged because of the inoperable assembly, establish an hourly fire-watch patrol through the zone(s)

   b. If fire detection is not operable in the zone(s) of concern, within 1 hr establish a continuous fire-watch on at least one side of the affected assembly if redundant systems or components could be damaged because of the inoperable assembly. For the other zones, establish an hourly firewatch patrol.

9A.6.8.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.8-1.

---

*Includes walls, floor/ceilings, cable tray enclosures, and other fire barriers plus all sealing devices in fire rated assemblies such as fire doors, fire dampers, and cable, piping, and ventilation duct penetration seals.

TABLE 9A.6.8-1 FIRE RATED ASSEMBLIES SURVEILLANCE

Each of the required fire rated assemblies and penetration sealing devices shall be demonstrated operable by:

Interval	18 Months
	Performing a visual inspection of (1) The exposed surfaces of each fire rated assembly (2) Each fire damper and associated hardware (3) At least 10 percent of each type of sealed penetration. If changes in appearance from abnormal degradations are found, a visual inspection of an additional 10 percent of that type of sealed penetration shall be made. This inspection process shall continue until a 10 percent sample is found with no apparent changes in appearance or abnormal degradation. Samples shall be selected such that each penetration seal will be inspected at least once per 15 years

Each of the required fire doors shall be verified operable by inspecting the automatic hold-open, release, and closing mechanism and latches at least once per 6 months and by:

Interval	24 Hours	7 Days	31 Days
	Verifying that each unlocked fire door without electrical supervision is closed	Verifying that each locked-closed fire door without electrical supervision is closed	Verifying the operability of the fire door supervision system for each electrically supervised fire door by performing a channel functional test. If only the fire door supervision system is inoperable, the door shall be verified closed either every 24 hr or 7 days depending on whether the door is locked or not until the supervision system for the door is operable

9A.6.9 Appendix R Alternative Shutdown Instrumentation and Controls

9A.6.9.1 Operability

1. The alternative shutdown system transfer switches, power, controls, and monitoring instrumentation channels in Table 9A.6.9-1 shall be operable when the reactor is in operational conditions 1 and 2 as defined by the Technical Specifications

2. With the number of operable alternative shutdown monitoring instrumentation channels less than required by Table 9A.6.9-1, restore the operable channels to operable status within 7 days or be in at least hot shutdown within the next 12 hr

3. With one or more alternative shutdown system transfer switches, power, or control circuits inoperable, restore the inoperable switches/circuits to operable status within 7 days, or be in at least hot shutdown within the next 12 hr.

9A.6.9.2 Surveillance

Surveillance intervals and actions/requirements are shown in Tables 9A.6.9-2 and 9A.6.9-3.

TABLE 9A.6.9-1 APPENDIX R ALTERNATIVE SHUTDOWN INSTRUMENTATION AND CONTROLS

Instrument	Readout Location	Minimum Channels Operable
1. CTG unit 1 - volts	H21-P623	1
2. CTG unit 1 - frequency		1
3. CTG unit 1 - watts		1
4. CTG unit 1 - vars		1
5. Condensate storage tank level		1
6. Standby feedwater flow		1
7. Reactor water level		1
8. Reactor pressure		1
9. Torus water temperature		1
10. Torus water level		1
11. Primary containment temperature		1

Control Circuits	Switch Location
TRANSFER (T), CONTROL (C), CMC (CMC), PUSHBUTTON (PB), SELECTOR (S)	
(T) EF1 supv. control	H21-P623
(T) EF2 system transfer	
(C) Voltage control	
(C) Governor control	
(CMC) CTG 11 Unit 1 control status	
(C) 120 KV pos GM bkr control	
(C) 120 KV pos GK bkr control	
(C) 120 KV pos GH bkr control	
(C) 120 KV pos GD bkr control	
(CMC) CTG 11 pos A2 bkr control	
(CMC) 13.2 KV pos A7 outbuilding - TSC FD bkr control	
(CMC) 13.2 KV pos A6 SS64 alt fd bkr control	
(CMC) SS64 pri pos D bkr control	
(CMC) SS66 pri pos C bkr control	
(CMC) SS67 pri pos B bkr control	
(CMC) Trans 1 sec pos A bkr control	
(CMC) SBFW pump A bkr control	
(CMC) SBFW pump B bkr control	
(CMC) 4160V pos V1 bkr control	
(CMC) 4160V pos V3 bkr control	
(CMC) 4160V pos W5 bkr control	
(PB) SBFW flow control N21-F002	
(PB) SBFW flow control N21-F003	
(PB) SBFW iso valve N21-F001	
(PB) SRV line B B21-F013 G	

TABLE 9A.6.9-1 APPENDIX R ALTERNATIVE SHUTDOWN INSTRUMENTATION AND CONTROLS (Cont'd)

Control Circuits		Switch Location
(T)	4160-V pos C9 tie breaker control (cutoff switch)	H21-P624
(T)	4160-V circuit breaker pos C10 core spray pump C control (cutoff switch)	
(T)	4160-V pos C5 circuit breaker control	
(T)	4160-V pos C6 circuit breaker control	
(T)	4160-V pos C8 circuit breaker control	
(T)	4160-V C11 circuit breaker control	
(CMC)	Residual heat removal pump C	
(CMC)	4160-V pos C6 incoming breaker control	
(CMC)	4160-V diesel gen bus #12 EB breaker control	
(CMC)	ESS bus 720 transf R1400S023A primary control	
(T)	43S-5B transfer sw vlv. E11-F004C	H21-P625
(T)	43S-6D transfer sw vlv. E11-F048A	
(T)	43S-5A transfer sw vlv. E11-F003A	
(T)	43S-5C transfer sw vlv. E11-F006C	
(T)	43S-6A transfer sw vlv. E11-F047A	
(T)	43S-6B transfer sw vlv. E11-F068A	
(T)	43S-7A transfer sw vlv. E44-F602A	
(T)	43S-4D transfer sw vlv. E44-F607A	
(T)	43S-5D transfer sw vlv. E11-F016A	
(T)	43S-9C transfer sw fan T47-C002	
(T)	43S-4C transfer sw vlv. P44-F606A	
(T)	43S-3C transfer sw vlv. E11-F009	
(T)	43S-3A transfer sw fan T41-B018	
(S)	43S-TW TR SW valve T50-F412A, E41-F400	
(PB)	Suppr pool to pump C vlv. E11-F004C	
(PB)	RHR heat exch A byp vlv. E11-F048A	
(PB)	RHR HX A outlet E11-F003A	
(PB)	SDC suction to RHR pump C E11-F006C	
(PB)	RHR heat exch A inl vlv. E11-F047A	
(PB)	RHR SW control vlv. E11-F068A	
(PB)	EECW Div I HX inlet iso P44-F602A	
(PB)	EECS to drywl isolation P44-F607A	
(PB)	Contm spray otbd iso vlv. E11-F016A	
(CMC)	Drywell cooling fan 2	
(PB)	EECW from drywell P44-F606A	
(PB)	RHR suction cooling inbd vlv. E11-F009	
(S)	Drywell cooling fan 2 (low, high speed)	
(CMC)	RHR emergency equipment cooler 1	
(PB)	Torus water level isolation valve E41-F400	
(PB)	Torus water level isolation valve T50-F412A	

TABLE 9A.6.9-1 APPENDIX R ALTERNATIVE SHUTDOWN INSTRUMENTATION AND CONTROLS (Cont'd)

Control Circuits		Switch Location
(T)	43S-5A transfer switch vlv. E11-F024A	H21-P626
(T)	43S-2A transfer switch vlv. E11-F028A	
(T)	43S-1AR transfer switch fan T47-C001	
(T)	43S-3AR transfer switch vlv. E11-F004A	
(T)	42S-5DR transfer switch vlv. E11-F611A	
(PB)	Suppr pool cooling test E11-F024A	H21-P626
(PB)	Suppr Chmb Sp Otbd Iso VLV. E11-F028A	
(CMC)	Drywell cooling fan 1	
(PB)	Suppr pool to pump A E11-F004A	
(S)	Drywell cooling fan 1 (low, high speed)	
(PB)	RHR Recirc. Dtbd bypass E1150-F611A	
(T)	43S-1B transfer switch vlv. B31-F031A	H21-P627
(T)	43S-2B transfer switch vlv. E1150-F010	
(T)	43S-2C transfer switch vlv. E1150-F015A	
(T)	43S-3A transfer switch vlv. E1150-F017A	
(PB)	Recirc pump a disch vlv. B31-F031A	
(PB)	Cross-tie header vlv. E11-F010	
(PB)	RHR to recirc. inbd iso vlv. E11-F015A	
(PB)	RHR recirc otdb iso vlv. E11-F017A	
(T)	43S-4B transfer switch vlv. P44-F616	H21-P628
(S)	EECW from drywell inbd iso P44-F616	
(PB)	Dedicated shutdown system	H11-P811

TABLE 9A.6.9-2 APPENDIX R ALTERNATIVE SHUTDOWN INSTRUMENTATION AND CONTROLS SURVEILLANCE REQUIREMENTS

Instrument	Channel Check[a]	Channel Calibration[b]
1. CTG unit 1 - volts	M	R
2. CTG unit 1 - frequency	M	R
3. CTG unit 1 - watts	M	R
4. CTG unit 1 - vars	M	R
5. Condensate storage tank level	M	R
6. Standby feedwater flow	M	R
7. Reactor water level	M	R
8. Reactor pressure	M	R
9. Torus water temperature	M	R
10. Torus water level	M	R
11. Primary containment temperature	M	R

[a] M = Monthly.

[b] R = Refueling Outage.

TABLE 9A.6.9-3 APPENDIX R ALTERNATIVE SHUTDOWN INSTRUMENTATION AND CONTROLS SURVEILLANCE

INTERVAL		
31 Days	18 Months	Refueling
Each alternative shutdown monitoring instrumentation channel in Table 9A.6.9-2 shall be demonstrated operable by performance of the channel check	Each alternative shutdown system transfer switch, power supply, and control circuit in Table 9A.6.9-1 shall be demonstrated operable by verifying its capability to perform its intended function(s) at least once per 18 months	Each alternative shutdown monitoring instrumentation channel in Table 9A.6.9-2 shall be demonstrated operable by performance of the channel calibration operations

9A.6.10 Appendix R Alternative Shutdown Auxiliary Systems

9A.6.10.1 Operability

1. The alternative shutdown auxiliary systems shall be operable when the reactor is in operable conditions 1 and 2, as defined by the Technical Specifications, with

   a. A standby feedwater (SBFW) system consisting of one operable SBFW pump and a flow path from the condensate storage tank to the reactor vessel

   b. An operable combustion turbine generator (CTG) Unit 1 and power train capable of supplying power to the 64C bus via its peaker bus

   c. An operable drywell cooling unit (either B001 or B002) consisting of a fan and cooling coil capable of being fed from the emergency equipment cooling water (EECW) system.

2. With the SBFW system inoperable, restore the system to operable status within 7 days or be in at least hot shutdown within the next 12 hr and in cold shutdown within the following 24 hr

3. With an inoperable CTG Unit 1, verify that the 120-kV bus is available by performing Technical Specifications surveillance 4.8.1.1.1 and

   a. Within 24 hr, establish a roving firewatch for all the fire zones where Appendix R alternative shutdown is utilized

   b. Within 7 days, restore CTG Unit 1 to operable status or within 14 days provide an alternative source of power to the alternative shutdown bus

   c. Each of the required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be determined operable at least once per 7 days by verifying correct breaker alignments and indicated power availability. Otherwise be in at least hot shutdown within the next 12 hr and in cold shutdown within the following 24 hr

   d. With both drywell cooler units B001 and B002 inoperable, restore at least one to operable status within 7 days or be in at least hot shutdown within the next 12 hr and in cold shutdown within the following 24 hr.

9A.6.10.2 Surveillance

Surveillance intervals and actions/requirements are shown in Table 9A.6.10-1.

TABLE 9A.6.10-1 APPENDIX R ALTERNATIVE SHUTDOWN AUXILIARY SYSTEMS SURVEILLANCE

Interval	31 Days

(1) The SBFW system shall be demonstrated operable by conducting a flow test (on a staggered test basis)

(2) The CTG Unit 1 system shall be demonstrated operable by starting and supplying load to the peaker bus

(3) Either one of the drywell cooling units B001 and B002 shall be verified to be capable of performing its intended function

ENCLOSURE 2

(8) Study of Multiple Control System Failures (Section 7.7.2, SER)

Prior to startup following the first refueling outage, DECo shall provide the NRC staff for its review and approval, the necessary analysis or modifications needed to resolve the impact of control system failures due to a failure or malfunction of power sources or sensors which provide power or signals to two or more control systems.

(9) Modifications for Fire Protection (Section 9.5.1, SSER #5 and SSER #6)

~~(a)~~ DECo shall implement and maintain in effect all provisions of the approved fire protection program as described in its Final Safety Analysis Report for the facility through Amendment 60 and as approved in the SER through Supplement No. 5, subject to provisions ~~(b) and (c) below~~: THE FOLLOWING

~~(b) DECo may make no change to the approved fire protection program which would significantly decrease the level of fire protection in the plant without prior approval of the Commission. To make such a change, DECo must submit an application for a license amendment pursuant to 10 CFR 50.90.~~

INSERT →

~~(c) DECo may make changes to features of the approved fire protection program which do not significantly decrease the level of fire protection without prior Commission approval provided:~~

~~(i) such changes do not otherwise involve a change in a license condition or Technical Specification or result in an unreviewed safety question (see 10 CFR 50.59), and~~

~~(ii) such changes do not result in failure to complete the fire protection program approved by the Commission prior to license issuance.~~

~~DECo shall maintain, in an auditable form, a current record of all such changes, including an analysis of the effects of the changes on the fire protection program, and shall make such records available to NRC inspectors upon request. All changes to the approved program shall be reported to the Director of the Office of Nuclear Reactor Regulation, together with the FSAR revisions required by 10 CFR 50.71(e).~~

~~(d) DECo shall install and make operational, the independent alternate shutdown system in accordance with the schedule contained in its letter dated July 5, 1985. The interim~~

(a) DECo may make changes to the approved fire protection program without prior approval of the Commission only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

~~procedures and measures described in Section 9.5.1 and Appendix E of SSER #5 and #6 shall continue to be implemented, including removal of power from the Division 1 cooling tower bypass valve (No. E1150-F603A) and from either the single series valve (No. E1150-F008) in the reactor heat removal (RHR) system or the two parallel RHR suction valves (Nos. E1150-F600 and E1150-F009) during normal plant operation until the independent alternate system is declared operational.~~

(10) Emergency Diesel Generator Lube Oil Surveillance Program (Section 9.5.7, SSER #5)

DECo shall implement its commitments regarding the surveillance program for the lubricating oil system of the emergency diesel-generators as described in its letters dated March 6, March 14 and March 15, 1985.

(11) Low-Pressure Turbine-Disc Inspection (Section 10.2.2, SER)

DECo shall perform an inspection of the low-pressure turbine-discs during the second refueling outage, including volumetric examination of the disc base using ultrasonic techniques. The frequency of subsequent inspections shall be in accordance with the turbine manufacturer's recommendations.

(12) Retention of Persons with BWR Operating Experience on Shift (Section 13.1, SSER #5)

At all times the plant is in an operating condition other than cold shutdown or refueling, DECo shall have a licensed senior operator on each shift who has had at least six months of hot operating experience on a similar type plant, including at least six weeks at power levels greater than 20 percent of full power, and who has had start-up and shutdown experience. For those shifts where such an individual is not available on the plant staff, DECo shall provide an advisor who has had at least four years of power plant experience, including two years of nuclear plant experience, and who has had at least one year of experience on shift as a licensed senior operator at a similar type facility. Use of advisors who were licensed only at the reactor operator level or who otherwise do not fully meet the criteria for shift advisor, will be evaluated by the NRC staff on a case-by-case basis. As a minimum, DECo shall train these advisors on the procedures, Technical Specifications and plant systems for the Fermi-2 facility and DECo shall examine the advisors on these topics at a level which will assure their familiarity with the plant. For each shift, the remainder of the shift crew shall